

- Fig. 20. *Act. cheltonensis*, n. sp. Inferior Oolite, Cheltenham. Radials and basals only, $\times 4$: *a*, from the side; *b*, from beneath.
21. *Pentacrinus asteria*. From Barbadoes. Calyx, $\times 4$: *a*, from side; *b*, from beneath.
22. *Solanocrinus Jaegeri*, Quenstedt. *a*, from side; *b*, from beneath. Copied from Quenstedt.
23. *Pentacrinus Wyville-Thomsoni*. North Atlantic. Calyx, $\times 3$: *a*, from side; *b*, from above; *c*, from beneath.
24. *Pentacrinus Jaegeri* = *Solanocrinus Jaegeri*, Goldf.: *a*, from side; *b*, from above; *c*, from beneath. Copied from Goldfuss.

PLATE XII.

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- Fig. 25. *Ant. macrocnema*. Sydney Harbour. Calyx, $\times 6$: *a*, from side; *b*, from above; *c*, radials and basals from beneath.
26. *Act. stelligera*, n. sp. Pacific (Stat. 174). Calyx from side, $\times 6$.
27. *Act. lineata*, n. sp. Bahia. Centrodorsal with two radials, rosette, and part of basal star, \times : *6a*, side view of interior of calyx; *b*, the same, seen from above.
28. *Promachocrinus kerguelensis*, n. sp. Balfour Bay, Kerguelen. Calyx from side, $\times 6$.
29. *Ant. antarctica*, n. sp. Heard Island. *a*, calyx from side; *b*, radials and basals from below: $\times 6$.
30. *Ant. Lundgreni*. From the Upper Chalk, Margate. Centrodorsal with one basal attached, $\times 3$: *a*, from side; *b*, from above.

MOLLUSCA OF H.M.S. 'CHALLENGER' EXPEDITION.—Part VI.
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[Read April 15, 1880.]

TURRITELLIDÆ, n. sp.

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|--------------------------|---------------------------|
| 1. TURRITELLA RUNCINATA. | 6. TURRITELLA AUSTRINA. |
| 2. — ACCISA. | 7. — DELICIOSA. |
| 3. — CARLOTTÆ. | 8. — (TORCULA) ADMIRA- |
| 4. — PHILIPPENSIS. | BILIS. |
| 5. — CORDISMEI. | 9. — (TORCULA) LAMELLOSA. |

The genus *Turritella* is a group well defined, as regards the shell, the animal, and the operculum; nor is it unmanageably large. There is therefore no *primâ facie* reason for breaking it up as Gray has done; and his destructive process has not justified itself in the characters of the genera he proposed, which are

neither strongly marked nor constant. The consequence is that the lists of species arranged under *Turritella* (with subgen. *Hau-stator*), *Torcula*, and *Zaria* are arbitrary in the extreme; and these divisions only cause confusion.

There are two remarkable features of *Turritella* which do not seem to have been noticed. The first is the system of microscopic spirals which covers the entire shell, and which I have found on every even fairly preserved specimen which I have examined. The second is the presence of an epidermis. This is very distinctly recognizable in *T. carlottæ* and in *T. austrina*, and somewhat doubtfully in *T. admirabilis*. It is filmy, calcareous, and in drying seems to contract, so as to rise off the surface of the shell in the furrows, remaining attached only on the tops of the spirals and in the suture. It also splits in the lines of growth. All this renders it of course very caducous; and, as Mr. E. Smith remarks, "the fact of all *Turritellas* appearing to be devoid of an epidermis is quite comprehensible, seeing how excessively thin it is in this instance" (*i. e.* of *T. carlottæ*). Hardly sufficient importance seems generally given to the situation of the outer lip, which is a feature quite as distinctly marked as in *Pleurotoma*.

1. *TURRITELLA RUNCINATA*, n. sp.

St. 162. Ap. 2, 1874. 39° 10' 30" S., 146° 37' E. S.E. Australia, off East Moncœur Island, Bass Strait, 38–40 fathoms. Sand.

Shell broadly conical, a little rounded at the basal angle and on the base, with a distinct suture and a deep labial sinus, thinnish, translucent, and speckled. *Sculpture*. Longitudinals—the surface is closely covered with very fine and strongly curved lines of growth, which on the base are stonger and radiate very straight, but interruptedly, out from the centre. Spirals—there are on each whorl two strongish, but rounded and somewhat ill-defined, carinations: of these, the lower and stronger lies about one fifth of the whorl's height above the suture; the upper and less definite lies a little more than halfway between the lower carina and the superior suture: between these two carinas, but nearer the upper one, lies a thread with almost enough of prominence to form a third carina, and this one sometimes supersedes the upper carina altogether. Besides these, the whole surface is sharply fretted with fine, rounded, unequal, irregular, interrupted, spiral threads, of which a considerable number are stronger than the rest, espe-

cially those toward the base of the whorls are so. The microscopic spiral frettings, which are distinct from these and very much more minute, are present, but want sharpness. The upper whorls are smooth and polished. *Colour* yellowish, more or less tinged and speckled with brown and white. The white is strongest toward the top of the whorls and is in suffused patches; the brown, which also occurs in suffused patches, is prettily dotted in minute specks on the spiral threads. The colour pales on the upper whorls; but the apex is yellow. *Spire* very perfectly conical, though the contour-lines are interrupted by the projection of the inferior carina and by the impression of the suture. *Apex* very fine and small, but rounded, the extreme tip being a little depressed on one side and the first whorl towards its end projecting a very little beyond the second. *Whorls* 15, almost flat, with a constriction between the two carinas, narrowed gradually upwards, but more quickly into the inferior suture, roundly angulated at the basal edge, with a flattish base which is but feebly conical. The last four or five whorls are higher proportionally than the earlier, which are of very slow and gradual increase; the first two are markedly smaller than those which follow; all the earlier whorls are distinctly convex. *Suture* fine, but distinct. *Mouth* rather small, almost square, but a little higher than it is broad. *Outer lip* very straight, roundly angulated below, patulous and almost canaliculate at the pillar-point; it advances a good deal at its junction with the preceding whorl, from which point it retreats so as to form a very deep and narrow sinus, the upper edge of which lies along the upper carina, and whose apex occupies the depression between the upper and lower carina. The lower edge of this sinus advances in a line much more oblique than its upper edge, which is almost parallel to the suture; it is the deep curve of this sinus which bends the lines of growth into so strong a curve as they cross the whorls. *Inner lip* is spread across the body as a thin glaze; it thickens a little toward the base of the pillar, round and behind which it spreads, so as to leave a minute umbilical pore. *Pillar* is very straight in the line of the axis, but is bent backwards more than is usual in the genus; its edge is narrow, rounded above, with a brilliant milky gauze, slightly reverted and sharp below, and ending in a fine point. H. 1.25. B. 0.4, least 0.38. Penultimate whorl, height 0.18. Mouth, height 0.28, breadth 0.22.

This resembles the *Turritella sinuata*, Reeve; but in that the apex is much finer, the earlier suture much shallower, and the whorls of much slower increase. It is extremely like some specimens in the British Museum, on a tablet numbered "906. Bass Strait," and on the back of which there is written "45 fms., coarse sand and dead shells;" but they are, I think, distinct. In many respects it recalls the well-known Mediterranean and Atlantic species *T. triplicata*, Broc.; but it is a smaller and more delicate species than that, and the finer spiral sculpture is very much more delicate and irregular.

2. *TURRITELLA ACCISA*, n. sp.

St. 162. April 2, 1874. Lat. 39° 10' 30" S., long. 146° 37' E. S.E. Australia, off E. Moncœur Island, Bass Strait. 38–40 fms. Sand.

Shell.—Subulate, a very little contracted at the edge of the flattish and little conical base, with a strongly furrowed suture, on the lip a deep sharp sinus, thinish, speckled. *Sculpture*. The surface is closely covered with very fine sharp scratches on the highly curved lines of growth, which are specially crisp on the base, where they are flexuous and unbroken. Spirals—there are on the last whorl two keels, one near (about 0·04 millim. from) the top, the other a little further (about 0·05 millim.) from the bottom of the whorl: both are blunt, roundly swollen bands defined by the sutural contraction, but the upper one is slightly the sharper; the under one is the stronger and better defined, the sutural contraction below it being more abrupt instead of presenting the mere sloping shoulder which lies between the upper band and the suture. Between these two carinations the slightly impressed surface is scored by several threads and furrows, of which sometimes one, sometimes two are stronger than the rest. Similar threads, but with feebler furrows, occupy the suprasutural contraction, the suture being margined on its upper side by a small slightly swollen band; where the suture ceases at the upper corner of the mouth, this band forms the roundly angulated edge of the base, strongly defined by the furrow which lies above it. Besides these stronger spirals, the whole surface is irregularly scored with fine spiral threads. Towards the apex the minuter sculpture disappears, the two keels lose their prominence, and the whorls are sharply carinated by one of the



Labral sinus of
Turritella accisa, W.

in intermediate threads; the first two whorls are smooth. *Colour* a brownish yellow, with ruddy spots of undefined outline. These spots on the keels are large, on the intermediate threads they are small; they follow in their direction the curves of growth; the upper part of the spire and the middle of the base have a suffused stain of this colour. *Spire* is high, narrow, and perfectly conical. *Apex* very fine, ending in a minute, transparent, glassy knob, which is not in the least depressed or spread out. *Whorls* 15-16, of very gradual increase, almost flat on the sides, with a strong constriction below and a more gradual contraction above; the upper whorls are angulated. There is a slight contraction, and within that an angulation round the edge of the base, which is flattish and slightly conical. The first two are hyaline. *Suture* sharp and strongly defined. *Mouth* rather large, almost round. *Outer lip* scarcely advancing, sweeping freely out with a rounded curve from the body to the pillar, and rather patulous throughout, especially at the point of the pillar, where there is a slight canal. Between the two keels there is a deep V-shaped sinus, the form of which is preserved in the curves of growth. *Inner lip* is spread as a thin brown glaze, which just encompasses the base of the pillar. The *pillar* is narrow, rounded, with the lip-edge just turned back on it; it is curved and rather bent backward; the basal lip sweeps out beyond the point of it. H. 1.15. B. 0.34, least 0.31. Penultimate whorl, height 0.18. Mouth, height 0.21, breadth 0.17.

There are unnamed specimens of this species on a tablet in the British Museum numbered "924 b. Bass Strait, 40 fms." It is very like *Turritella pagoda*, Rve.; but that is a narrower shell, of slower increase, and with fewer spirals. *T. sinuata*, Rve., is also slimmer and smoother, of slower increase, flatter whorls, and finer apex. *T. Gunnii* is very like, but is smoother, and has a still deeper and more impressed suture. In general aspect of form, colour, and sculpture it resembles *T. conspersa*, Ad. & Rve.; but the resemblance utterly disappears on closer observation. That is broader and squarer in the base, the colour is more blotchy and less suffused, the upper whorls of the spire are finer, the suture is much more impressed, and the whorls are much more angulated; it has no deep labial sinus, nor is any trace of that left on the lines of growth. The *T. incisa*, Tenison Woods, 45 fms., from Port Jackson, has the deep narrow sinus of this species, but seems to be a much smaller shell relatively to the

number of whorls, 11 millims. to 13 whorls being his measurement. *Turritella accisa* differs from *T. runcinata*, W., in being smaller, narrower, suture much deeper, upper whorls angulated and sculptured, not rounded, and smooth; and the apex is much finer and sharper, and is hyaline white, while in that species it is brownish yellow and hardly translucent.

3. *TURRITELLA CARLOTTÆ*, n. sp.

St. 162. April 2, 1874. Lat. $39^{\circ} 10' 30''$ S., long. $146^{\circ} 37'$ E. Moncœur Island, Bass Strait. 38–40 fms. Sand.

St. 167 *a*. June 27, 1874. Lat. $41^{\circ} 4'$ S., long. $174^{\circ} 19'$ E. Queen Charlotte Sound, New Zealand. 10 fms. Mud.

Shell.—High, narrow, conical, with slightly impressed suture and an angular flattened base, thin, translucent, with fine ruddy spiral threads. *Sculpture*. Longitudinals—there are fine, thread-like, close-set curved lines of growth. Spirals—there are two principal, two secondary, and very many minor spirals; but the relative value of these varies a good deal; they are little raised, but distinct. The base is covered with fine crowded spirals, of which those near the edge are stronger than the rest. The microscopic system of spirals is fine, sharp, and distinct. *Colour* yellowish ashy white, with a suffused ruddy brown on the upper part of the whorls, and a stronger shade of the same colour defining the more important spirals. The colour becomes altogether paler up the spire, and the apex is white. *Spire* very perfectly conical; but the profile lines are interrupted by the impressed sutures. *Apex* small, rounded, smooth and glossy, consisting of $1\frac{1}{2}$ embryonic whorl; the next whorl is slightly angulated, after which the regular sculpture begins. *Whorls* 15, very slightly convex on the sides, contracting gradually upwards into the suture; towards the bottom of the whorl the contraction into the suture is shorter, straighter (*i. e.* less convex), and more rapid; they are of very gradual and regular increase. Towards the upper part of the spire the curve of the profile line of each whorl becomes increasingly stronger. The base is flat, very slightly conical, sharply angulated, and not contracted at the edge. *Suture* very slight, but well defined. *Mouth* small, angularly rounded, a little higher than broad. *Outer lip* a little drawn in and advancing on the edge of the base, descends straight to the lower outer angle, is flat across the base, and a little patulous in front of the pillar-point. The generic sinus in the outer lip is parabolic in form. *Inner lip*. There is not (though the specimens are full-grown) even a

glaze across the body nor round the base of the pillar; but on older specimens this may probably exist. *Pillar* is a little concave, rather direct, with a thin rounded edge. *Epidermis* a very thin and delicate calcareous membrane, obviously not extraneous; it adheres to the top of the spirals and stretches across their furrows. It is sparsely cleft by minute gaping rents in the direction of the lines of growth, and the microscopic sculpture of the shell is traceable in it, but rather on its under than its upper surface. H. 0·95. B. 0·28, least 0·25. Penultimate whorl, height 0·15. Mouth, height 0·16, breadth 0·14.

This species has some resemblance, both in form and sculpture, to *T. knysnaensis*, Krauss, but it is narrower, suture less impressed, whorls not so convex; the embryonic apex is very like, but in the 'Challenger' species it is a little more swollen and depressed.

4. TURRITELLA PHILIPPENSIS, n. sp.

St. 161. April 1, 1874. Lat. 38° 22' 30" S., long. 144° 36' 30" E. Off entrance to Port Philip, S. Australia. 38 fms. Sand.

Shell.—A narrow cone ending a little abruptly in a sharp point, profile lines straight, base angulated and flat, of a suffused brown colour with longitudinal brown flecks. *Sculpture*. Longitudinals—fine, numerous, close, much-curved lines of growth. Spirals—there is a slight angulated swelling at the top and bottom of each whorl (that at the top being rather nearer the suture than that at the bottom); between these the surface of the whorl is slightly concave, with a flat feebly projecting band in the middle, the upper and lower edge of which is defined by a spiral thread; besides these, which are absent in the upper whorls, the whole surface is marked by irregular and unequal narrow and almost obsolete spiral threads, which are stronger on the base. The generic microscopic spirals are strong, but without delicacy or depth. *Colour* ruddy light brown, with darker longitudinal curved flecks; on the upper whorls the centre of the whorl is coloured and the top and bottom is white; the three apical whorls are porcellanous white. *Spire* perfectly conical in its profile lines. *Apex*, the last whorl contracts suddenly and rises in a fine rounded, but almost sharp, point. *Whorls* 11; but the shell is not full-grown. They are almost flat on the sides, with a slight angular contraction into the suture above and below; the flat base is angulated at the edge and is a little conical. *Suture* is slightly impressed by a shallow broadish angular depression

Mouth, outer and inner lip, and *pillar* are not fully developed. The generic sinus is parabolic shaped. H. 0·61. B. 0·19, least 0·17. Penultimate whorl, height 0·12. Mouth, height 0·13, breadth 0·1.

This species is somewhat like *Turritella sinuata*, Rve., but is a narrower shell with higher whorls, which are less convex; the apical whorls are much larger, and the apex itself sharper and more prominent.

5. *TURRITELLA CORDISMEI*, n. sp.

St. 162. April 2, 1874. Lat. 39° 10' 30" S., long. 146° 37' E. Monœeur Island, Bass Strait. 38–40 fms. Mud.

Shell.—A very narrow cone ending in a small, slightly swollen, rounded, and depressed point, rather glossy, of a suffused yellowish-brown colour with ruddy spots. *Sculpture*. Longitudinals—there are many fine, close-set, deeply curved lines of growth. Spirals—on the edge of the base there are two strongish flattish threads, the lower a little contracted within the other; they are parted by a flat open furrow, in the bottom of which runs a fine thread: similar to this last there are about six equally parted spiral threads on the side of the whorls, and about seven, closer set, on the base; besides these there are several finer ones. The microscopic spirals of the genus are sharp and distinct. *Colour* a suffused yellowish brown, with small ruddy-brown and white flecks on the upper part of the whorls. The apex is glassy white. The whole shell is rather polished. *Spire* high and perfectly conical. *Apex* consists of 1½ small, rounded, slightly tumid and depressed whorl. *Whorls* 12 (but the shell is not full-grown); they are a little convex on the side, with a slight gradual rounded contraction into the suture above and below; but the convexity is less on the earlier whorls. The edge of the base is faintly contracted and bluntly angulated; the base is a little convex and but slightly conical. *Mouth &c.* not fully developed. The generic sinus on the outer lip is a deep semioval. H. 0·44. B. 0·13, least 0·12. Penultimate whorl, height 0·07. Mouth, height 0·1, breadth 0·08.

With some resemblance to *T. philippensis*, this species is much smaller, and differs entirely in sculpture and in the form of the whorls and shape of the apex.

6. *TURRITELLA AUSTRINA*, n. sp.

St. 144 b. December 26, 1873. Lat 46° ?' ?" S., long. 37° ?' ?" E. Off Marion Island, Prince Edward Island. 100 fms.

St. 149 *d.* January 20, 1874. Lat. 49° 28' S., long. 70° 13' E.
Royal Sound, Kerguelen. 28 fms. Mud.

Shell.—Conical, with rounded whorls, basal angle, and base, a deeply impressed suture, a fine tapering point, a round mouth, two strong spiral threads on each whorl, a very distinct yellow epidermis. *Sculpture*. Longitudinals—there are many fine, faint, close-set, semicircular lines of growth preserving the curve of the labral sinus. Spirals—there are two strong rounded threads about one third of the whorl's height apart; they are nearly equally prominent and angulate the whorls, strongly in the earlier, less so in the later stages of growth. Between these is a shallow open furrow, in the middle of which is a fine narrow thread; one or two similar threads lie remotely on the upper slope of the whorl, where it contracts gradually into the suture; one spiral thread of the same kind lies in the open furrow, which abruptly contracts the bottom of the whorl into the suture. The edge of the base is contracted and rounded, with a strong spiral thread which meets the outer lip; the base is smooth but for the sharp and very strong generic spiral lines which cover the whole surface and are not microscopic, being easily seen with a lens. *Colour* porcellanous white under the straw-yellow epidermis. *Spire* high and conical; but its profile lines are deeply interrupted by the strongly contracted sutures. *Apex* drawn out to a fine, prominent, but rounded and slightly tumid point. *Whorls* 12, well rounded, with a slight double carination; the two carinating threads lie nearer the bottom of the whorl; they are separated by a shallow furrow: beneath the under one the whorl is sharply contracted into the suture, while from the upper keel the whorl slopes by a regular curve into the superior suture. The first 6 or 7 whorls are markedly smaller than those which follow. The base is round and rather prominent. *Suture* fine, but strongly marked by the contraction above and below. *Mouth* rather small, round. *Outer lip* slightly advancing on the edge of the base, somewhat open, very slightly angulated at the lower outer corner, a very little flattened on the base, patulous, and a little angulated at the point of the pillar. *Inner lip* crosses the body and coils round the base of the pillar as a very thin glaze. *Pillar* a little oblique, curved, patulous, sharp, and with a distinct twist on the edge. *Epidermis* very distinct, thin, membranaceous, and marked with the fine generic spiral lines; it is very caducous. In drying it seems to have risen through contraction, so as to remain attached

to the summit of the spirals, while it stretches across the intervening furrows. *Operculum* small, darkish brown, of very many flanged whorls. H. 0·8. B. 0·25, least 0·21. Penultimate whorl, height 0·12. Mouth, height 0·18, breadth 0·15.

This species is very like our British *Turritella terebra*, L., but is stumpier in form, smaller, with a much more impressed suture, and fewer spiral threads. Than *T. Hookeri*, Rve., Antarctic Expedition, this is also much stumpier, the apex is rounder and blunter, and the suture is deeper. Than *T. pagoda*, Rve., from which it also differs in form and suture, it is distinguished by a finer apex, and in that the second spiral thread is much weaker than in the 'Challenger' species. Than *T. knysnaensis*, Krauss, it differs in being stumpier, with a finer drawn and yet at last abrupter apex. It extremely resembles *T. duplicata*, L., but in form is stumpier, and the spiral threads are fewer. *T. triplicata*, Broc., has also more strong and very many more fine spirals.

7. *TURRITELLA DELICIOSA*, n. sp.

St. 185 b. August 31, 1874. Lat. 11° 38' 15" S., long. 143° 59' 38" E. Raine Island, Cape York, N. Australia. 155 fms. Sand and shells.

Shell.—Conical, with bicarinated contracted whorls and impressed suture, rounded base, blunt, rounded, and slightly tumid apex, porcellanous glossy white. *Sculpture*. Longitudinals—there are very many, irregular, close-set, fine, strongly curved lines of growth, which preserve the curve of the labial sinus. Spirals—each whorl is carinated by two strong, broad, rounded threads, of which the lower lies about one fourth of the height of the whorl above the inferior suture, while the upper is slightly nearer the superior suture. Close above each is a minute thread which is like the shadow of the others. Between the two keels the surface of the whorl is impressed by a broad, shallow, rounded furrow, in the bottom of which is a spiral thread intermediate in strength between the keels and their shadows. On the base there are about nine small spiral threads, the innermost of which are feebler than the rest; they are parted by slight shallow furrows which are narrower than the threads. The generic microscopic fretting can only be made out in peculiarly good light; but though very faint, it is certainly present in the furrows. *Colour* porcellanous, almost hyaline. *Spire* conical, drawn out, the profile lines just a little interrupted by the carinations of the whorls.

Apex small, consisting of two embryonic whorls, perfectly rounded, not depressed, slightly tumid, hyaline. *Whorls* 12, of very slow and regular growth, prominent at the keels, but contracted above and below and in the middle. The last is round and prominent on the base, in the centre of which it is impressed in an open umbilical pit. *Suture* very fine and inconspicuous; towards the end of the last whorl it is very deeply sunk, from the contraction of the outer lip upon the base. *Mouth* small, rectangularly triangular, the right angle being at the base of the pillar. *Outer lip* advancing a good deal at its junction with the base, and drawn in very much toward the base of the pillar, so that at this point its direction is very nearly at right angles to that of the shell's axis, curving a little, and retreating into the labral sinus; it here meets the nearly straight line of the patulous and prominent basal lip, which almost forms a sinus at the point of the pillar. *Inner lip* carried as a thin glaze across the body and round the base of the pillar, so as almost to form an umbilical chink behind it. *Pillar* perpendicular, straight, with a slight twisted swelling at about one third of its length; the edge is very thin and narrow, flat, patulous, and projecting at the side of the pillar as a small ledge. H. 0.35. B. 0.085, least 0.072. Penultimate whorl, height 0.038. Mouth, height 0.053, breadth 0.055.

This very beautiful little shell has some features which recall *Bittium*; but it has a distinct canal at the point of the pillar, and it has the labral sinus of *Turritella* as well as the peculiar microscopic spiral fretting of the genus, though this feature is very obsolete. It has, on the other hand, some features of strong individual peculiarity which separate it from any *Turritella* known to me. These are its pure hyaline porcellanous colour, its peculiar triangular-shaped mouth, and the *Vertagus*-like swelling on the pillar-lip, which, however, is not to be found in the earlier stages of growth, as no trace of it appears in the many broken specimens. In general aspect it somewhat resembles *Cerithiopsis Jeffreysi*, E. Sm.; but that species is much more attenuated and ends in a sharp apex, has three strong spiral threads, and is longitudinally ribbed.

8. TURRITELLA (TORCULA) ADMIRABILIS, n. sp.

March 7, 1875. Admiralty Islands, N.E. of Papua. 16–25 fms.

Shell.—Conical, with a very slight convexity, angulated at the edge of the hollowed base, with a shallow impressed suture; whorls

a little rounded, slopingly shouldered above with a broad open labial sinus. *Sculpture.* There are very faint sharp curved lines of growth, strongest, as usual, on the base. Spirals—besides the bluntly angulated and slightly swollen basal carina, which appears as a slight projection above the suture at the base of each whorl, there are two threads whose prominence slightly carinates each whorl; they nearly trisect the whorl, but that the highest is a little more than a third of the whorl's height below the suture. There is another thread as broad, but less prominent, halfway between the lowest carinal thread and that above the suture; another, narrower, appears less than halfway between the upper carinal thread and the suture. On the upper whorls the upper carinal thread becomes much the most dominant and angulates the whorls. Besides these, the surface is closely covered with unequal, fine, flat-topped threads parted by very narrow square-cut furrows. There are of these threads about fifty above the basal carina of the last whorl. On the base there are about the same number, or rather more, of similar threads; but the furrows are opener and shallower. Of these basal threads some six or seven are rather stronger than the rest. They are all a little interrupted on the base by the radiating lines of growth. Besides these lines, the whole surface is exquisitely fretted with delicate close-set, microscopic spirals, of which about four go to $\frac{1}{10000}$ in., and much more coarsely scored with longitudinal bars (about one thousandth of an inch apart), which in the furrows of the larger system of spirals appear like the sharp edges of very thin lamellæ, and which are probably in some way connected with the epidermis of the shell. The whole of this microscopic system of sculpture is present on the base. *Colour* porcellanous white, irregularly stained with suffused streaky blotches of ruddy brown, which appears as minute sparse specks on the carinal threads and on the base. *Spire* is high, narrow, and slightly scalar. *Apex* is broken. *Whorls.* There have evidently been 16–17 (but the first two or three are gone), of very regular increase; a few near the apex are angulated in the middle, but all the others are concavely and slopingly shouldered below the suture, somewhat straight in the middle, and slightly contracted below, where they project a very little at the suture beyond the top of the succeeding whorl. The edge of the slightly concave and barely conical base is right-angled. *Suture* defined only by the small ledge which projects above it. *Mouth* square, bluntly pointed above, and rounded on

the outer lip. *Outer lip* advancing a little on the edge of the base, bending outwards and a little patulous to the upper carination, from which point it runs straight to the outer lower angle, flat across the base, patulous and slightly channelled towards the point of the pillar, which it runs beyond. The generic sinus is a mere open concave curve. *Inner lip* crosses the body more as a polish than a glaze. *Pillar* perpendicular, white, with a slight twist, narrow, and with a flattened and patulous rather than reverted edge. H. 1.55. B. 0.47, least 0.46. Penultimate whorl, height 0.23. Mouth, height 0.25, breadth 0.23.

This species is in form very like *T. conspersa*, Ad. & Rve., from the "China Seas;" but that has the lirations equal, the whorls are more angulated, and the angulation is not formed, as in *T. admirabilis*, by a thread, but by a swelling in the whorl itself. The sculpture extremely resembles *T. bicolor*, Ad. & Rve., "China Seas;" but that is in form very much more attenuated, has the suture much deeper, and the individual whorls are higher in proportion to their breadth.

9. TURRITELLA (TORCULA) LAMELLOSA, n. sp.

St. 162. April 2, 1874. Lat. 39° 10' 30" S., long. 146° 37' E. Off E. Moncœur Island, Bass Strait. 38-40 fms. Sand.

Shell.—Like a *Terebra* in sharpness and slimness, perfectly conical, angulated at the edge of the base, which is flattish, with a strong, concavely curved, open, labial sinus, thin, translucent, and very pale-coloured. *Sculpture*. There are very many close-set, distinct, curved lines of growth, each of which is produced into a small, thin, sharp, appressed lamella. Spirals—above each suture the superior whorl projects in a slight rounded swelling, which slopes gradually outwards on its upperside, is slightly angulated at its greatest projection, and there defined by a fine thread, from which point it is suddenly, but not quite sharply, contracted into the suture. In some specimens this suprasutural swelling is very slight, being checked by a shallow open constriction which lies immediately above. The rest of the whorl is covered by a series of fine threads and shallow open furrows, 6 to 10 or 12 in number, varying much in strength and distance. Besides this larger system of sculpture, the whole surface (lamellæ and all) is fretted with the most delicate microscopic spiral ridges and furrows, which are faintly crimped longitudinally. The apical whorls are pretty sharply carinated and angulated about the middle, and are otherwise almost perfectly polished. *Colour* yellow ashy

white, with a few faint, suffused, small, ruddy blotches, chiefly on the spiral threads, but sometimes continuously curvedly longitudinal. The upper part of the spire is uniform white or ruddy. *Spire* high, narrow, and sharp, with straight profile lines. *Apex* glossy, porcellanous. The last $2\frac{1}{2}$ whorls contract rather suddenly to the very small, sharply rounded, and prominent point. *Whorls* 16, perfectly flat, with a slight tendency to angular convexity in the earlier ones, of very regular and gradual increase; the last is bluntly angulated on the edge of the base, which is conical and slightly convex. *Suture* linear and very slightly impressed, defined by the slight swelling of the base of the superior whorl. *Mouth* small, square-shaped, but higher than broad. *Outer lip* advances somewhat where it springs from the base, and is here a little drawn in from the edge; it advances with a slight curve, and is a little patulous toward the outer lower corner, is flat across the base, and advances rather beyond the point of the pillar, where there is a slight open canal. The generic sinus of the outer lip is semicircular. *Inner lip*: a flat, but distinct, porcellanous white callus crosses the body-whorl and spreads, but with decreasing thickness, round the base of the pillar. The *pillar* is narrow, rounded, and perpendicular. H. 1·3. B. 0·3, least 0·29. Penultimate whorl, height 0·18. Mouth, height 0·19, breadth 0·16.

T. Gunnii, Rve., from "V. Diemens Land," has a much coarser spire, a deeper suture, and the angle of the base more rounded. In general aspect *T. declivis*, Ad. & Rve., is not unlike, but the 'Challenger' species is of more rapid increase, has not the same projection above the suture, and the whole details of sculpture are different; but the specimens of *T. declivis* in the British Museum from the "China Seas" are in very bad condition. It has some resemblance to *T. monilifera*, Ad. & Rve., "China Seas;" but is a thinner shell, not so fine toward the apex, and the upper whorls want the angulation of that species.
